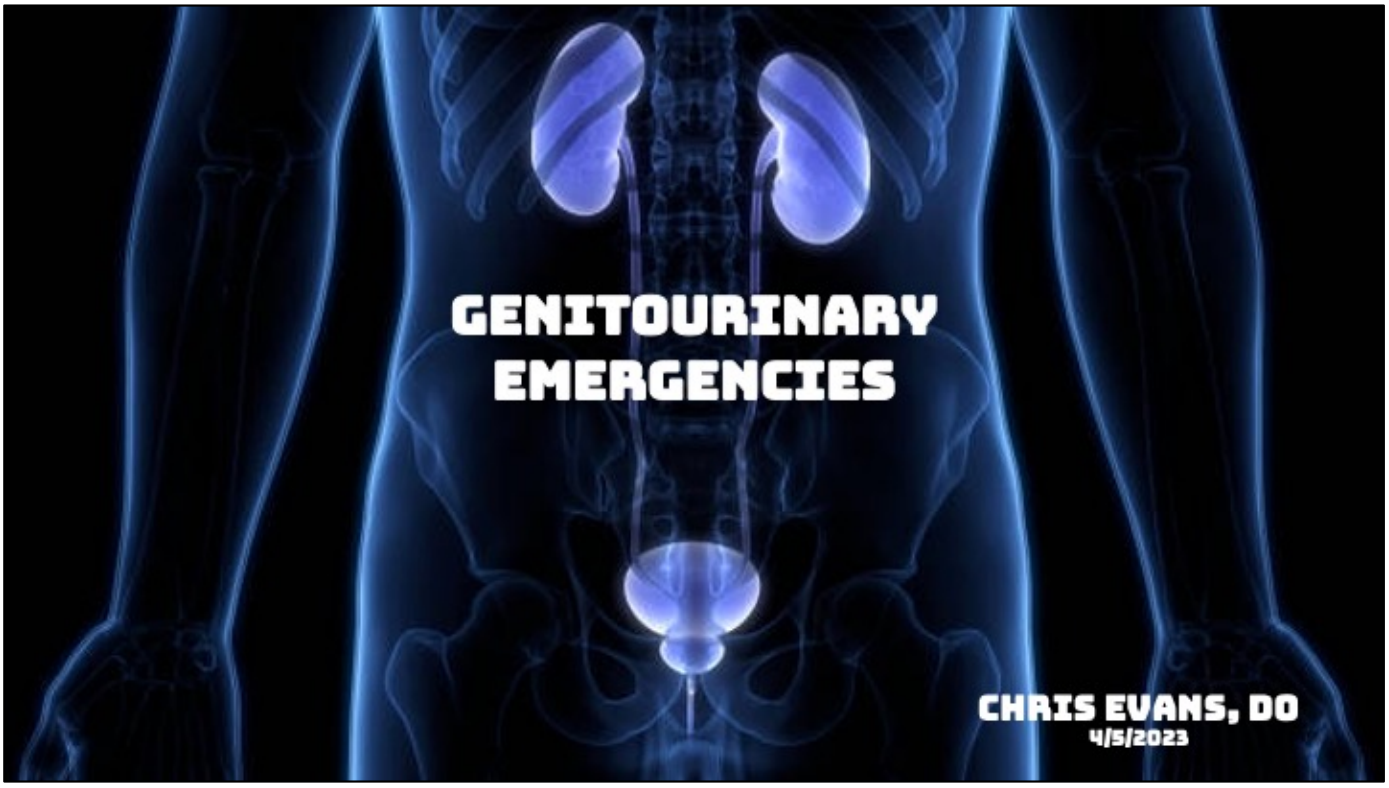

GENITOURINARY
EMERGENCIES
CHRIS EVANS, DO
4/5/2023

DISCLOSURES

NONE

OBJECTIVES

- REVIEW THE FOLLOWING GU EMERGENCIES
  - PRIAPISM
    - HIGH FLOW VS LOW FLOW
    - DORSAL PENILE NERVE BLOCK
    - TX- MEDS AND DRAINAGE
  - URINARY RETENTION
    - CAUSES
    - FOLEY CATHETER TROUBLESHOOTING
    - SUPRAPUBIC DRAINAGE
  - UTI ABX
  - PYELONEPHRITIS ABX

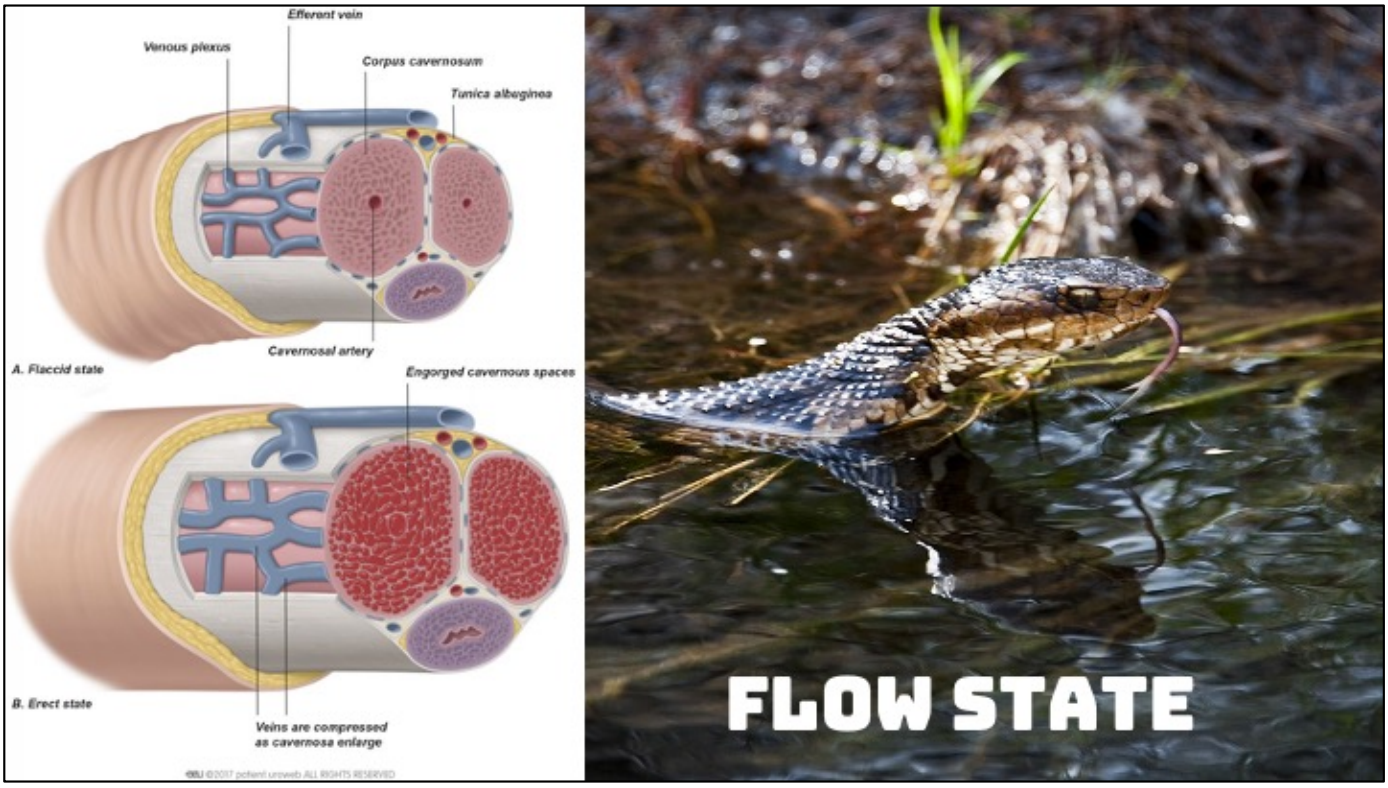

PRIAPISM

Definition

- Prolonged, pathologic penile erection >4hrs that can lead to permanent damage and impotence if not treated in timely fashion
- Compartment syndrome of the penis

Complications

- 4-8 hrs can minimize chance of permanent impotence
    - Sooner you can treat it, the better→ don't wait for urology to fix it
- Tissues in penis that contributes to erection dies→ need penile implant/surgery to obtain erection in future
- Structural changes of the cavernosal musculature observable after 12hrs
- 90% of men with priapism lasting >24hrs will have permanent erectile dysfunction
- 100% chance of permanent impotence if priapism >48hrs



- High flow
  - ~2% of cases usu assoc w/ neurologic injury/trauma, commonly saddle injuries or spinal cord trauma
  - Blood going in and out so rapidly that penis remains high, but this does not cause ischemia because blood is moving and O2 is being delivered
  - Non-ischemic and usu asx
  - Normal penile blood gas
- Low flow
  - Normal erection is low flow, but lasting <4hrs
    - Arterial flow goes into penis so quickly that it blocks off the veins→ no blood in and no blood out
    - Priapism is erection lasting longer than 4 hours: no flow in and no flow out → ischemia due to stasis and lack of O2 to tissues resulting in tissue death
    - Normal erection is a low flow state
  - Ischemic w/ sv pain
  - Acidotic penile blood gas
  - Without preceding traumatic event, almost always an ischemic, low flow priapism
  - Causes
    - Sickle cell
    - Meds

- Triple mix/Trimix- papaverine, PGE1, and phentolamine (intracavernosal injections)- overrides nerves that are required to regulate blood flow in penis and removes refractory period after ejaculation
- PDE5 inhibitors (siladenafil, tadalafil)
- Neuroleptics- trazodone, chlorpromazine
- Recreational drugs- cocaine, marijuana, methamphetamines

Presentation

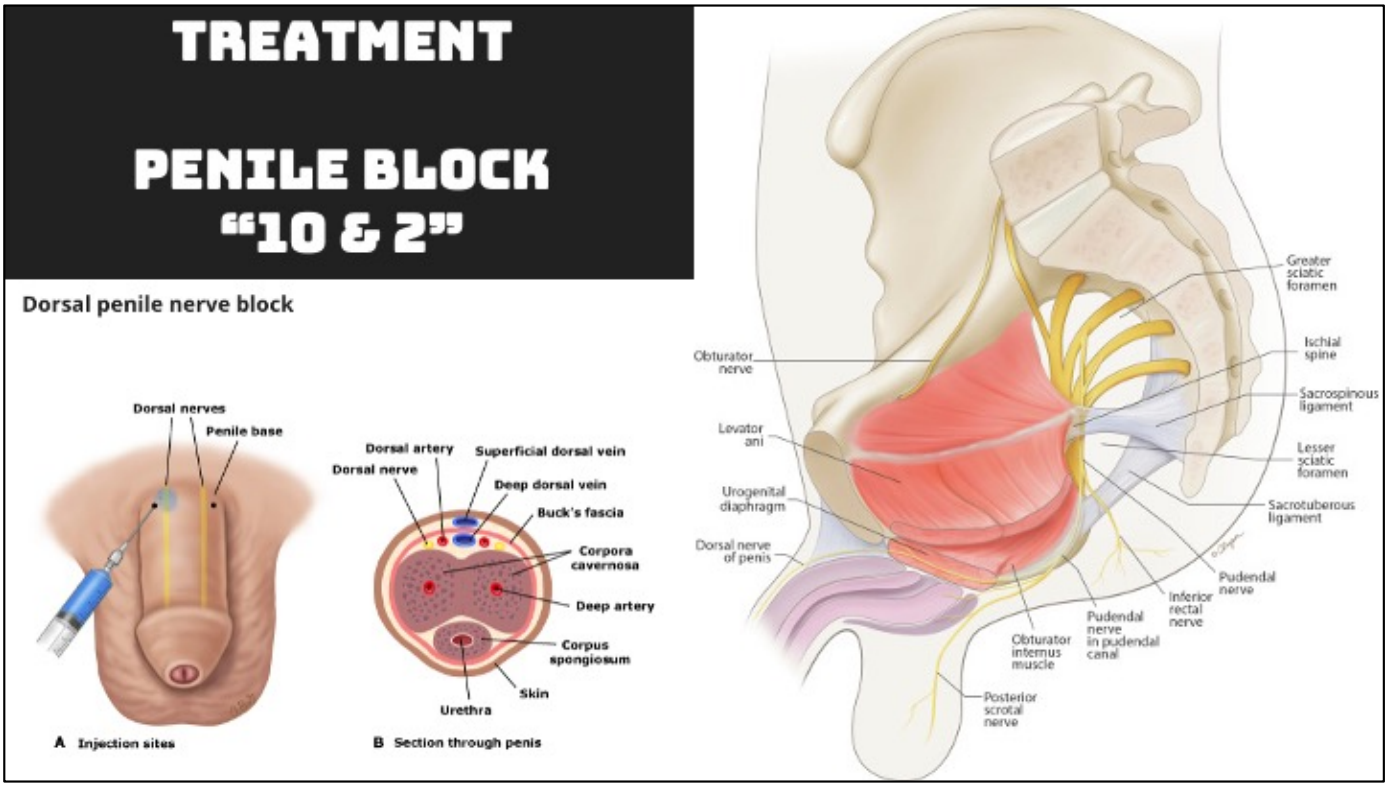
- Erect tender shaft with flaccid, nontender glans
- History essentially determines difference between high flow and low flow (trauma vs no trauma)

Labs

- Penile blood gas
    - Can help to show improvement and efficacy of tx
    - Ischemic blood will be dark, hypoxemic (pO2 <40), acidotic (pH <7.25), hypercarbic (pCo2 >60), and glucopenic


BLOOD GAS
pH < 7.25
PO2 < 40 mmHg
PCO2 > 60 mmHg

- Squats & stairs–the vagal maneuvers of priapism- have pt squat while gathering materials for aspiration & injection



Indications

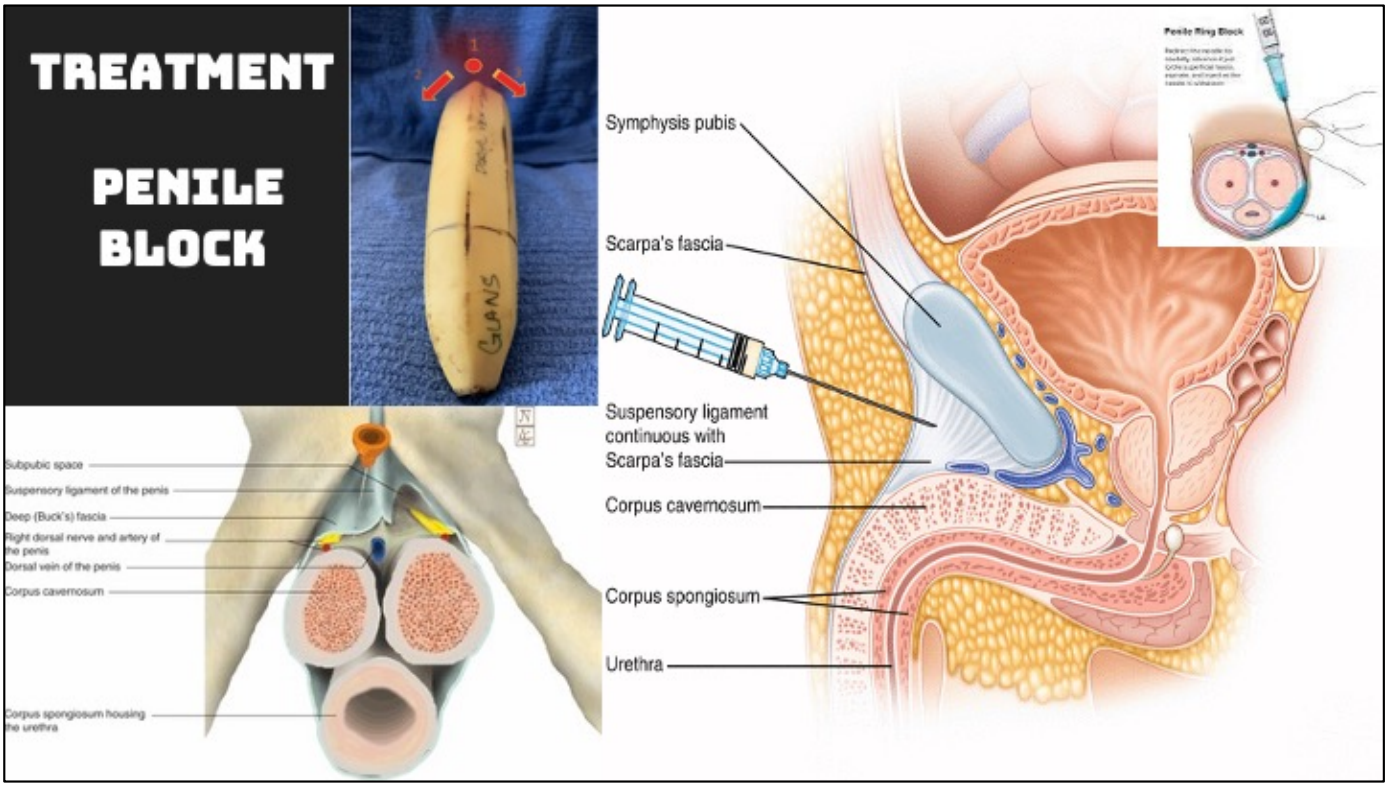
- Paraphimosis
- Priapism
- Penile lacerations
- Zipper injury
- Penile ring

Complications

- Damage to nearby structures
- Urethral dmg
- Permanent loss of sensation

Anatomy

- Penile innervation is derived from sacral nerve roots S2 and S4 via pudendal n.
    - Pudendal n divides to give terminal branches of dorsal penile nerves and perineal branch
- Dorsal n
    - Passes under inferior ramus of pubis→cont within Buck's fascia
- Frenulum of penis also receives innervation from branch of perineal branch located at 12 o'clock position of penis
- Dorsal nerve, arteries, and vein run along dorsal aspect of penis; corpus cavernosa flank this bilaterally; unpaired corpus spongiosum lies on volar side; urethra runs thru spongiosum

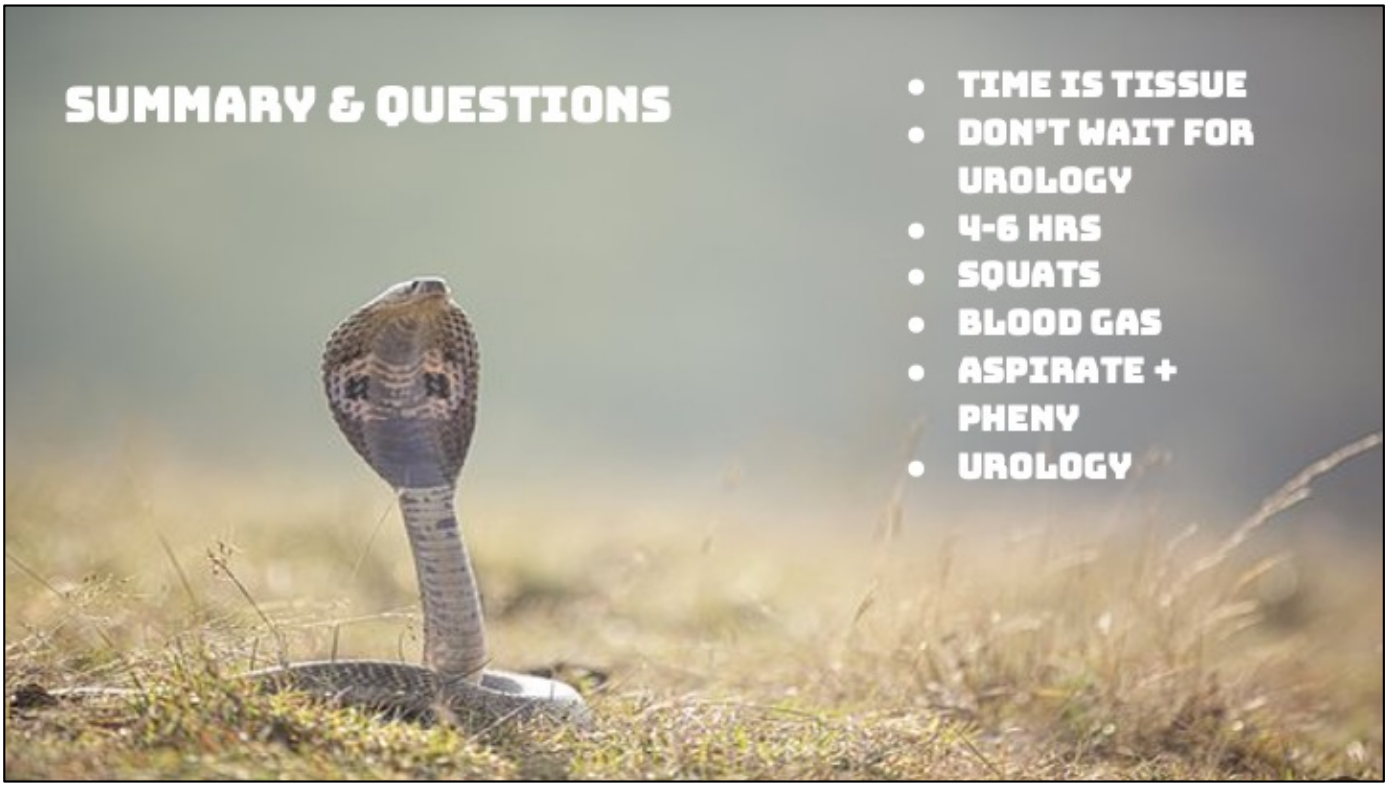


- Locate pubic symphysis→direct needle toward the pubic symphysis until you hit bone→withdraw slightly and redirect needle laterally to 2 o'clock position→ advance needle 3-5mm deep to the pubic symphysis→ aspiration to confirm not in vessel and inject 5cc of lido without epi→ withdraw needle without removing needle from the skin →repeat the process aiming toward the 10 o'clock position.

Tx

- Squats & stairs–the vagal maneuvers of priapism
- Penile block
- Aspiration
    - 19G butterfly, 16G IV unilateral or bilateral
    - Aspirate vs allow drainage
    - Can use same needles to instill phenylephrine
    - Procedure
        - Stabilize penis w/ 4x4 gauze around tip of penis
        - At 90 degree angle (to avoid urethral injury), insert 16G angiocath at 3 o'clock and/or 9 o'clock position of penis→insert until flash of blood→withdraw needle, leaving plastic IV catheter in place→drain onto gauze pads or towels located beneath the angiocaths→dark blood will drain and become brighter, arterial blood, showing procedure success
        - Degree of coagulation will influence 1 or 2 entry sites
        - Pt should squeeze pt proximally
- Irrigate corporeal blood w/ 10mL NS
    - Have pt squeeze proximally
- Phenylephrine
    - Reason to incorporate
        - Aspiration alone achieves detumescence in 25-33% of cases
        - Aspiration + phenylephrine achieves detumecence in 43-81%

of cases
        - Risk of post-priapism erectile dysfunction lower with sympathomimetic use
        - Combined aspiration/saline irrigation with sympathomimetics achieves detumescence in 80% of patients, but efficacy drops with duration of erection, esp >6hrs
    - Pathophys
        - Sympathomimetics induce contraction of cavernous smooth musc, permitting venous outflow (UTD)
    - Dose
        - EM Cases: 100mcg q5min
        - Core EM: 200-500mcg q20min x3min
        - ALiEM: 100-500mcg q5min x1hr
        - UTD: 100-500mcg/mL q3-5min x1hr
        - Total dose of 1mg over 1 hr
    - Pt should squeeze distally
    - “Pheny Stick”
        - A 10mL syringe with 1000mcg/10mL (100mcg/mL)
    - Making push-dose phenylephrine
        - EMCrit- 3mL syringe→draw up 1 mL of phenylephrine from phenylephrine vial (10mg/ml)-->inject into 100mL bag of NS→dilutes it to 1mg/100mL (100mcg/mL)-->Draw up into a 10mL syringe (100mcg/mL)
        - To make 200mcg/mL
            - If you put 1mL of drawn up phenylephrine into a 50mL bag of NS → 1mg/50mL→100mcg/0.5mL (200mcg/mL


SUMMARY & QUESTIONS
TIME IS TISSUE
DON'T WAIT FOR UROLOGY
4-6 HRS
SQUATS
BLOOD GAS
ASPIRATE + PHENY
UROLOGY

- AUR is the *most common* urologic emergency

Causes of retention

- Obstructive- BPH, prostate CA, gyn mass, bladder stones, fecal impaction, vag prolapse
    - Males
        - BPH is *most common* etio in men
        - ~10% of men over 70yo; 30% of men >80yo will develop AUR
        - constipation/fecal impaction
    - Females
        - Pelvic organ prolapse (cystocele/rectocele
        - Pelvic masses
- Infectious/Inflammatory
    - Prostatitis
    - UTI causing urethritis/urethral edema
    - Vulvovaginitis
- Neurologic
    - Cauda equina syndrome, cord compression, transverse myelitis, spinal cord trauma, MS
- Medications
    - TCA, antipsychotics (haldol), opioids, diphenhydramine, ephedrine, NSAIDs, anticholinergics
    - Most commonly anticholinergic and sympathomimetics

Presentation

- ALWAYS consider neurologic etiology
- New AUR
    - ALWAYS ask about back pain and “red flags,” esp first time AUR
        - Hx cancer, saddle anesthesia, bowel incontinence, lower ext weakness, hx IVDA, immunocompromised, fever, chills
    - Review medication list/inquire about new medications

Dx

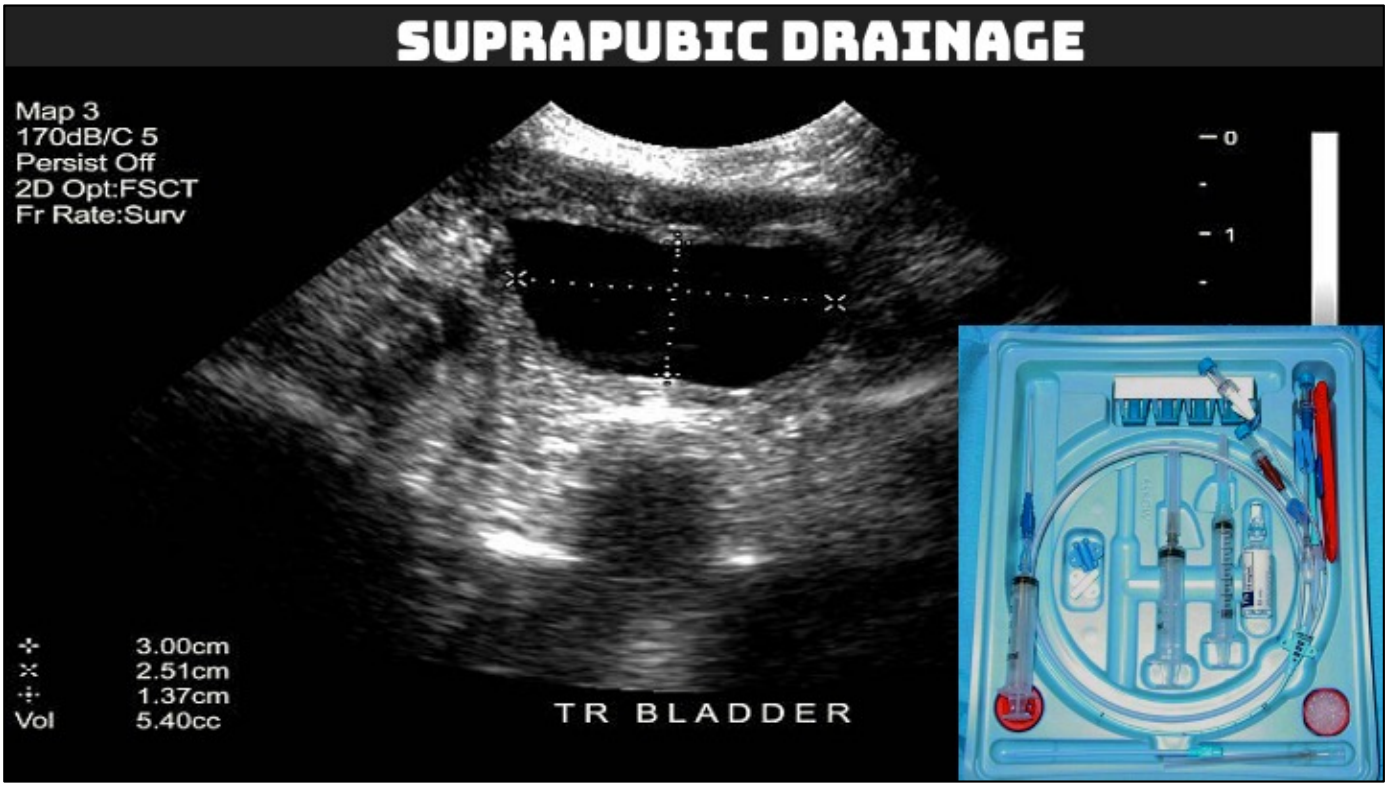
- Bladder vol >300 suggests AUR
- Bladder vol <200 likely do NOT have AUR

Tx- Catheterization

- First line: 14-18 french catheter
- If hx indicates possible urethral or prostatic scar
    - Eg prior transurethral procedure-TURP, prior radiation, pelvic trauma
    - Consider downsizing to 10 or 12 french catheter
- If no hx of prior instrumentation or injury, *most common* cause is enlarged prostate
    - A larger catheter with a firm coude tip is better to avoid the cracks and crevices of an enlarged prostate

Approach to Difficult Catheter Insertion

- Ample lubricant w/ lidocaine (urojet x2) to relax pelvic muscles (do not inject too quickly or will tense the pelvic muscles)
- Catheter choice
    - Go to: 16F Coude catheter
    - If BPH is problem→***INCREASE*** catheter size from 16F to 18F bc thicker catheter is less likely to find the cavities/crevices in an enlarged prostate
    - If urethral stricture is prob→***DECREASE*** size of catheter

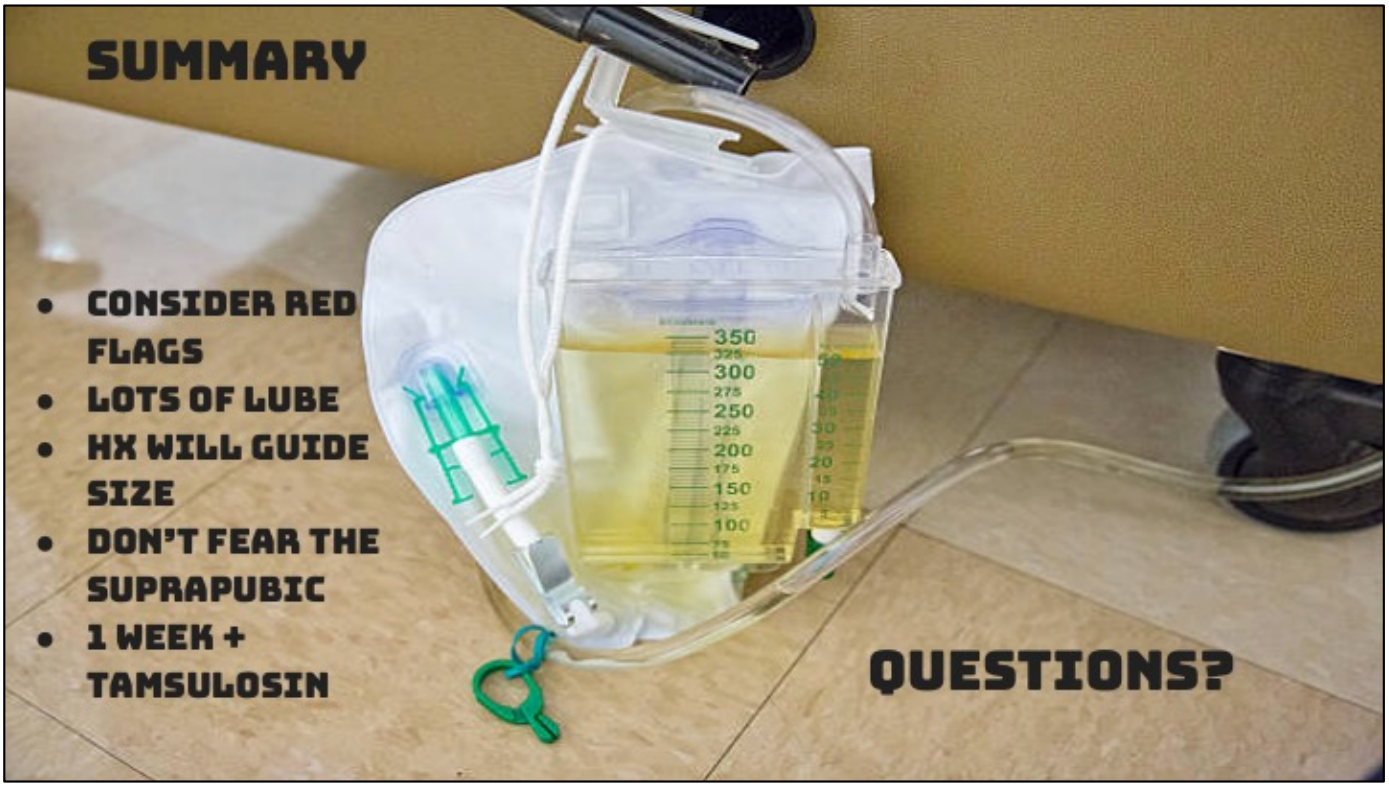


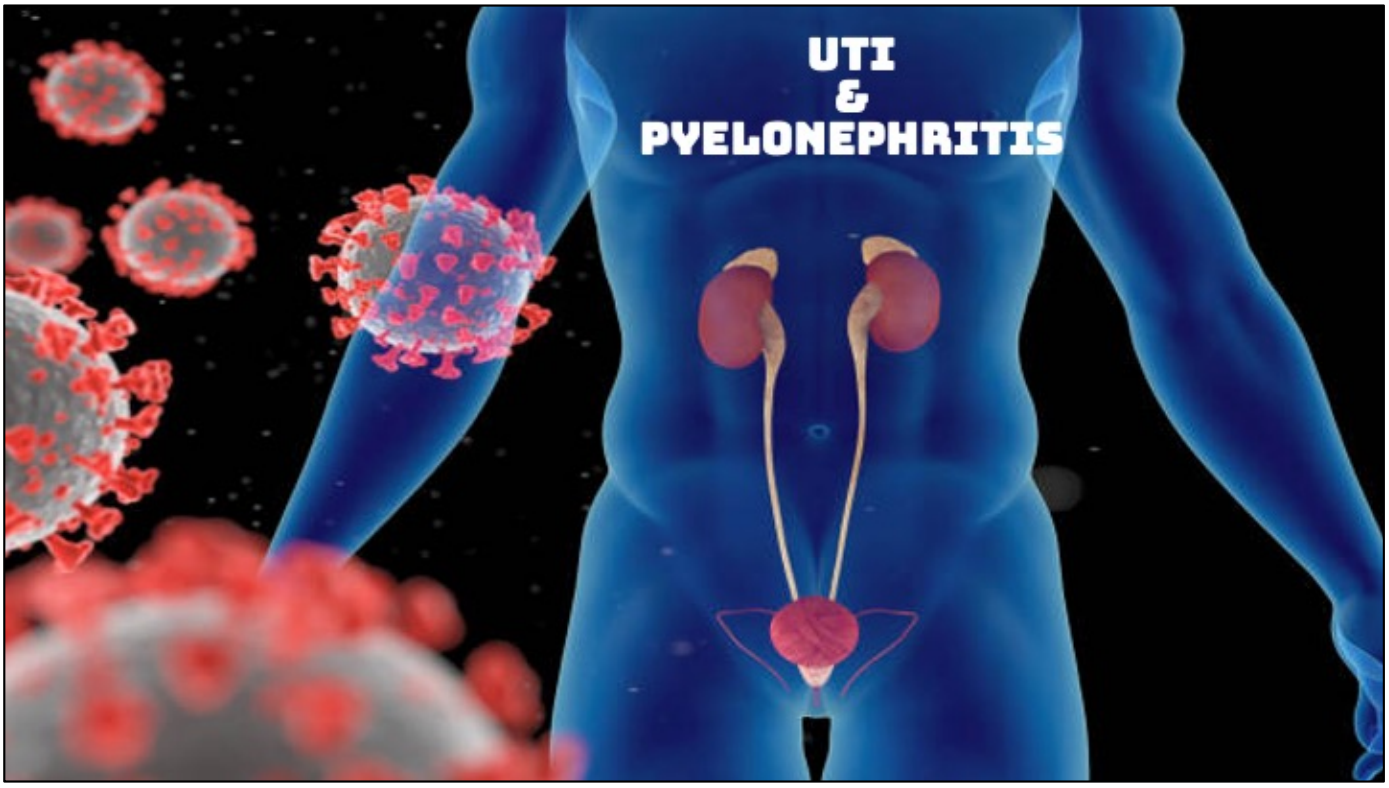
Suprapubic catheter insertion

- Open up CVC kit and use either the catheter or the actual CVC line
- Prep skin and apply local
- Under US guidance, advance needle→Seldinger technique→remove urine; can leave catheter or remove it as temporizing measure
    - Can also use a 22G spinal needle to remove urine and then pull needle after urine drainage

How long to leave foley in place?

- 7-10days
- If catheter removed too early 2-3 days, inc likelihood of needing re-catheterization due to bladder overstretch not recovering
- No need for abx ppx
- In BPH, give tamsulosin
    - Shown to decrease likelihood of recatheterization after void trial


SUMMARY
CONSIDER RED FLAGS
LOTS OF LUBE
HX WILL GUIDE SIZE
DON'T FEAR THE SUPRAPUBIC
1 WEEK + TAMSULOSIN
350
300
250
200
150
100
QUESTIONS?



UTI Tx

- Nitrofurantoin 100mg BID x5d
- Bactrim 160/800 BID x3d
- Cipro 500 BID x5d
- Fosfomycin 3g once
- Augmentin BID x5d
- Cephalosporins
    - Cefdinir 300mg BID x7d
    - Cefaclor 500mg TID x7d
    - Cefuroxime 250mg BID x7d
    - Cefpodoxime 100mg BID x7d

UA

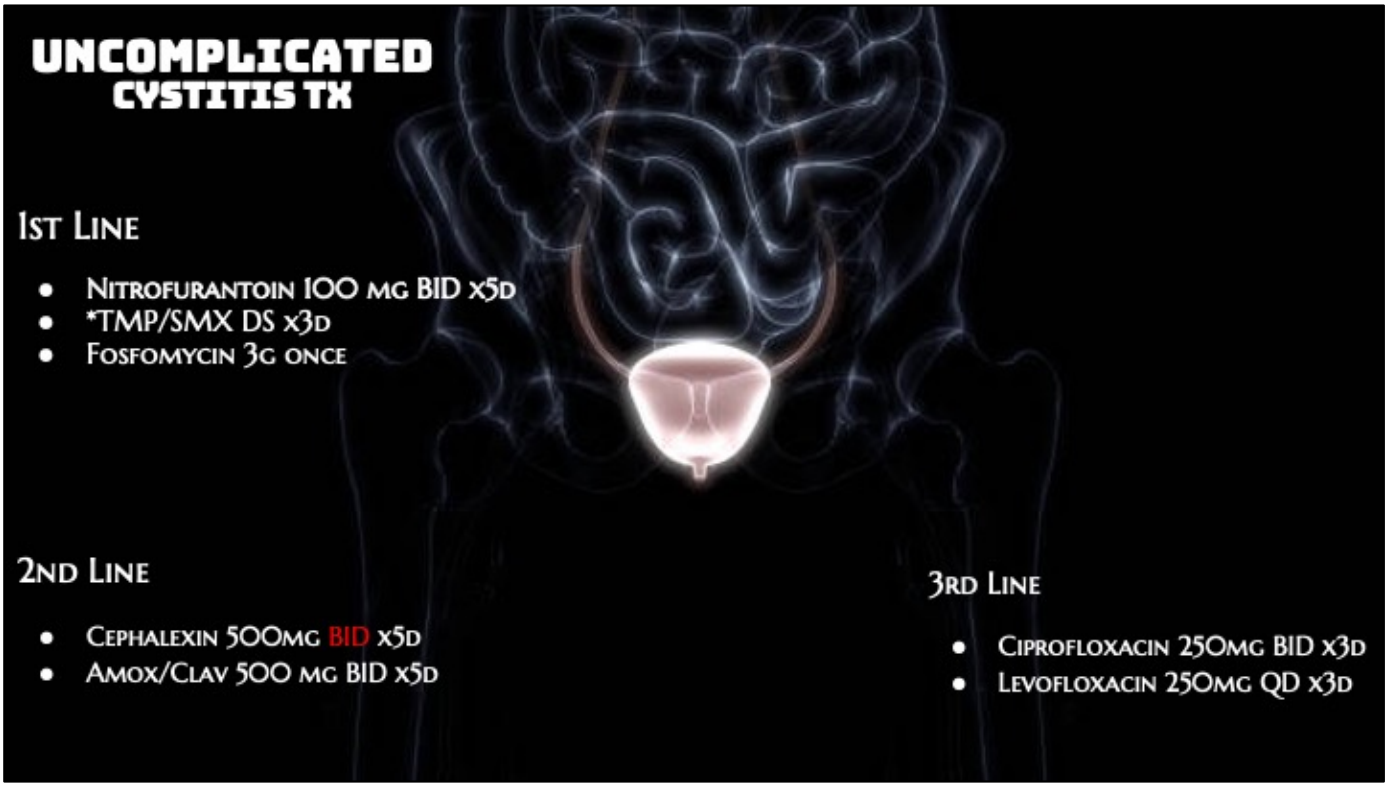
- Nitrites- specific, but not sensitive
    - False pos nitrites can occur when signif discoloration in urine making it red/orange (hematuria, myoglobinuria, urobilinogen, rifampin, pyrdium)
- + LE and WBCs inc likelihood of UTI
- + Nitrites and + LE is 98-100% specific for UTI
- WBC >10 per mm^3 correlates with bacterial concentrations of 10^5 cfu/mL, meeting culture def of UTI

Ucx

- For voided sample- 10^5 cfu/mL is pos
- For voided sample in sx pts- 10^2 cfu/mL is pos
- For cath sample- 10^2 cfu/mL is pos

Micro

- E. coli most common
- Staph saprophyticus also common
- Recent Instrumentation- E. coli, Klebsiella, pseudomonas, enterbacter



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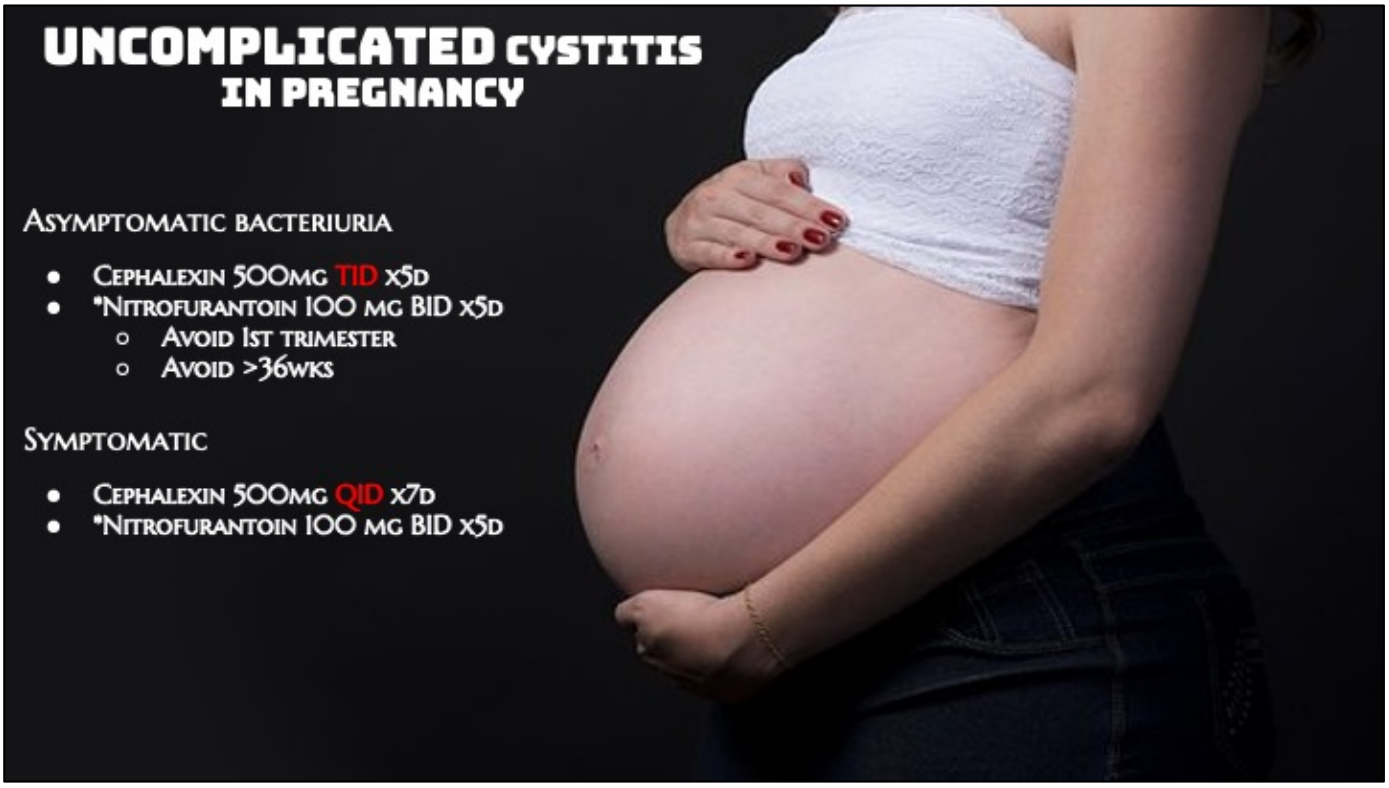

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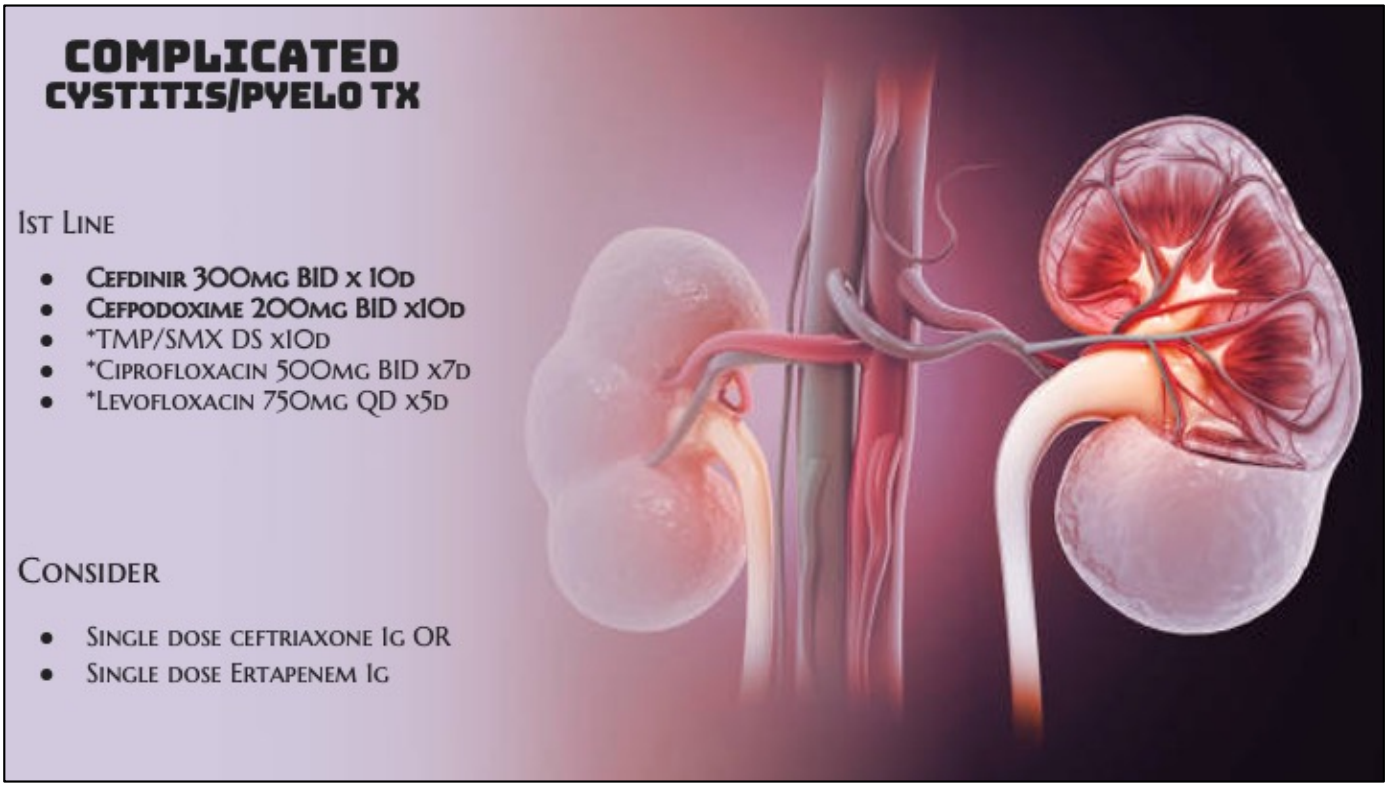
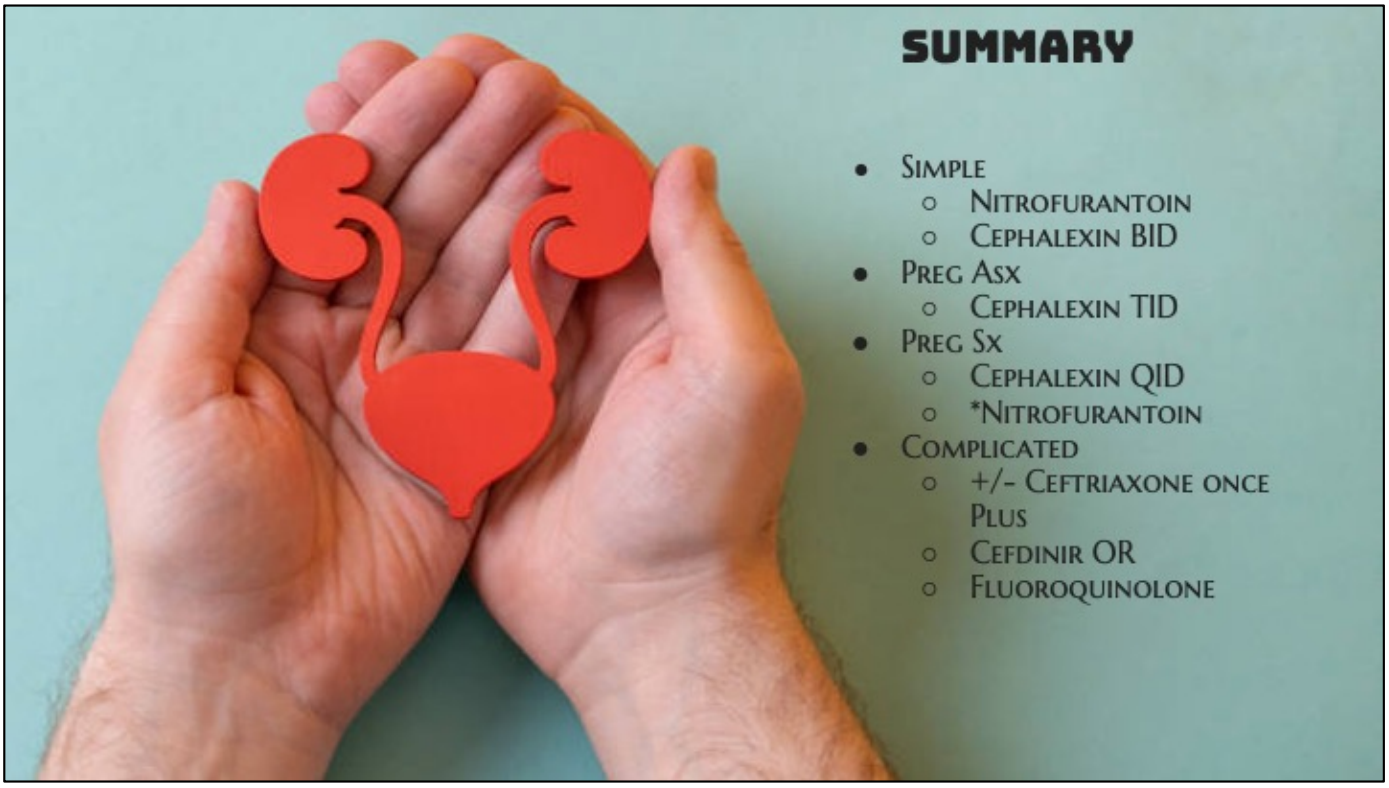


Single dose IV abx

- In pyelonephritis that will be treated as an outpatient, a single dose of ceftriaxone 1g is recommended
- Ertapenam 1g is alternative for allergy to ceftriaxone



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QUESTIONS?